

# Articles

## Firearms in New Mexico

STEFAN Z. WIKTOR, MD, MPH, *Atlanta, Georgia*; MARGARET M. GALLAHER, MD, *Santa Fe, New Mexico*;  
ROY C. BARON, MD, MPH, *Atlanta, Georgia*; MARY ELLEN WATSON; and  
C. MACK SEWELL, DrPH, *Santa Fe, New Mexico*

To determine the prevalence of firearm ownership and storage practices in New Mexico, we did a random-digit-dialing survey of New Mexico residents in October 1991. Of 200 households surveyed, 79 (40%) had 1 or more firearms in the home. Rural households were more likely than urban households to have firearms (44% versus 30%), and households with annual incomes of greater than \$25,000 were more likely to have a firearm than households with incomes of \$25,000 or less (41% versus 33%). Household firearm ownership did not vary with the presence of young (<15 years old) children (38% with children versus 41% without). Handguns were generally owned for self-protection, and rifles were owned for hunting. Of households with firearms, 24% stored them unsafely (unlocked and loaded or unloaded but with ammunition nearby), including 21% of households with young children. Of the households with handguns only, 40% stored these firearms unsafely compared with 13% of those with rifles only. The prevalence of gun ownership in New Mexico is similar to that reported in national surveys; handguns are stored less safely than rifles; and the presence of young children in the home does not appear to improve firearm storage safety.

(Wiktor SZ, Gallaher MM, Baron RC, Watson ME, Sewell CM: Firearms in New Mexico. *West J Med* 1994; 161:137-139)

Deaths due to firearms are a major public health problem in New Mexico. In the five-year period from 1985 to 1989, 1,488 New Mexicans died of firearm-related causes, and these deaths represent the sixth leading cause of death in New Mexico.<sup>1</sup> Easy availability of firearms is considered to be a risk factor for suicides as well as for homicides.<sup>2,3</sup> New Mexico's suicide rate is twice the rate of the nation, and in 1991, two thirds (66%) of suicides were completed by firearms (Annual Report, New Mexico Office of the Medical Investigator, 1991). New Mexico's adjusted homicide rate is the highest in the United States,<sup>4</sup> and in 1991, 51% of homicides were carried out by firearms (Annual Report, NM Office of the Medical Investigator, 1991). Unsafe storage of firearms in locations easily accessible to young children increases the likelihood of unintentional injury and death in this group.<sup>5</sup> Firearms are the fourth leading cause of death from unintentional injury among young children in New Mexico. More than 90% of these deaths occur among children who are playing with loaded firearms in the home.<sup>6</sup>

Despite the severity of this problem, little is known about the prevalence of firearm ownership and storage practices in New Mexico. This survey was carried out to assess the prevalence of firearm ownership in New Mexico and to characterize firearm storage practices.

### Methods

In October 1991, a random-digit-dialing telephone

survey of New Mexico residents was carried out by staff of the University of New Mexico Tumor Registry using methods developed for the Behavioral Risk Factor Surveillance System.<sup>7</sup> All New Mexico residents aged 18 years and older and owning a telephone were eligible. Respondents were asked whether any firearms were kept in the house and, if so, the number of firearms, the type, and the storage location of each firearm and whether each was locked. No attempt was made to identify the firearm purchaser or owner.

Additional information was collected on demographic characteristics of the respondent and the household. The ethnicity of the respondent was used as a surrogate for household ethnicity. County of residence was classified as urban or rural based on the 1990 census. Children younger than 15 years were defined as young children. Because the demographic information collected in the survey applied to the respondent, and this person was not necessarily the firearm owner, only household variables could be used to characterize firearm owners.

Households were classified into four storage-safety groups based on the least safely stored firearm in the household. In decreasing order of safety, these categories are as follows:

- All firearms stored locked,
- At least one firearm stored unloaded and unlocked with no ammunition nearby and no other firearm stored in a less safe manner,

From the Division of Field Epidemiology, Centers for Disease Control and Prevention, Atlanta, Georgia (Drs Wiktor and Baron), and the Division of Epidemiology, Planning, and Evaluation (Drs Gallaher and Sewell), and the Public Health Division (Ms Watson), New Mexico Department of Health, Santa Fe.

Reprint requests to Margaret M. Gallaher, MD, Div of Epidemiology, New Mexico Department of Health, PO Box 26110, Santa Fe, NM 87502-6110.

- At least one firearm stored unloaded and unlocked with ammunition stored nearby, and
- At least one loaded firearm stored unlocked.

For example, a household with three guns in which one was stored locked, one stored unlocked and unloaded, and one loaded and unlocked would be classified into the fourth group. For the purpose of this analysis, the first two categories are considered safe storage, whereas the last two categories of storage are considered unsafe. Data analysis was performed using Epi Info software.<sup>8</sup> Prevalence ratios,<sup>9(p147)</sup> 95% confidence intervals, and two-tailed Fisher's exact test were used as measures of association.

## Results

Of 274 households with an eligible respondent, 200 (73%) were surveyed, and 74 (27%) refused to participate. An additional 12 households had no eligible respondents. Of the survey respondents, 56% were non-Hispanic whites, 35% were Hispanic whites, and the remaining 9% included Native Americans, blacks, and Asians. This racial or ethnic distribution is similar to that reported in the 1990 census for New Mexico except for an underrepresentation of Native Americans: 4% of the survey respondents compared with 9% in the census. Two thirds of respondents (66%) were female compared with 50% of the New Mexico population based on the 1990 census.

Of the 200 households, 79 (40%; 95% confidence interval, 33% to 46%) had at least one firearm in the house. Of non-Hispanic white households, 44% had guns compared with 33% of Hispanic households and 39% of the households made up by other ethnic groups (Table 1). Of the rural households, 44% reported owning firearms compared with 30% of urban households. Households with annual incomes of more than \$25,000 had a higher prevalence of gun ownership (56%) than did households with lower incomes (30%). Firearm ownership did not vary by

TABLE 1.—Prevalence of Firearm Ownership by Household Characteristics, New Mexico, 1990

Characteristic	Total Households, No.	No.	%	Households With Firearms	
				Prevalence Ratio	95% Confidence Interval
<b>Racial or ethnic group</b>					
Non-Hispanic white . . . .	112	49	44	1.3	0.9, 2.0
Other . . . . .	18	7	39	1.2	0.6, 2.3
Hispanic white . . . . .	70	23	33	1	Referent
<b>Residence</b>					
Rural . . . . .	133	59	44	1.5	1.0, 2.2
Urban . . . . .	67	20	30	1	Referent
<b>Household income*</b>					
>\$25,000 . . . . .	73	41	56	1.9	1.3, 2.7
≤\$25,000 . . . . .	112	33	30	1	Referent
<b>Child &lt;15 years old in house</b>					
Yes . . . . .	85	32	38	0.9	0.6, 1.3
No . . . . .	115	47	41	1	Referent

\*Some respondents declined to answer the question.

\*Some respondents declined to answer the question.

TABLE 2.—Prevalence of Unsafe Firearm Storage by Selected Factors, New Mexico, 1990

Factor	Households With Firearms, No.	No.	%	Households With Unsafe Storage	
				Prevalence Ratio	95% Confidence Interval
<b>Child &lt;15 years old in house</b>					
Yes .....	23	6	21	0.7	0.3, 1.4
No .....	41	13	32	1	Referent
<b>Type of firearm owned*</b>					
Handgun only .....	15	6	40	3.1	0.9, 10.4
Handgun and rifle .....	32	10	31	2.4	0.7, 7.8
Rifle only .....	23	3	13	1	Referent

\*Nine respondents declined to answer the question.

\*Nine respondents declined to answer the question.

whether a young child lived in the house (38%) or not (41%).

Of the 79 households with firearms, 18 (23%) had only handguns in the house; all except 1 of these 18 households had only one handgun. In all, 25 households (32%) had only rifles, 32 (40%) had both handguns and rifles, and 4 households (5%) did not identify the type of firearm(s) owned.

The principal reason for owning firearms varied by type of firearm. Self-protection was the reason for 11 of the 18 households (61%) with handguns only, compared with 1 of the 25 households (4%) with rifles only. Of the 36 households with both types of firearms, 11 (31%) reported their use for self-protection. Hunting was the principal reason for gun ownership in 80% of households with rifles only, 58% of households with both types of firearms, and 6% of households with handguns only. Other reasons given for owning firearms were target practice, gun collecting, and protection of farm animals.

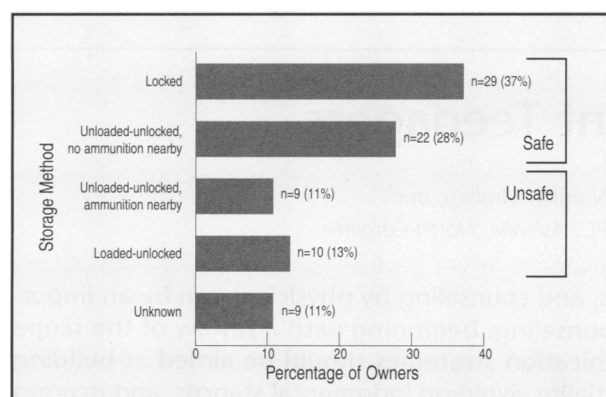
Figure 1 shows the distribution of firearm storage practices. Of the 79 households with firearms, 51 (65%) reported storing their firearms safely, 19 (24%) reported unsafe firearm storage, and 9 (11%) household respondents were either unwilling or unable to indicate storage practices.

Households with young children had a lower prevalence of unsafe storage (21%) compared with households with no young children (32%), although this difference was not statistically significant ( $P = .42$ ) (Table 2). Of households with handguns only, 44% reported storing their firearms unsafely compared with 13% of households with rifles only and 31% of households with both types of firearms.

A total of 12 loaded-unlocked firearms were stored in 10 different households; 1 household had loaded-unlocked guns stored in three separate locations. Storage locations included closets, drawers, gun cabinets, and under beds.

## Discussion

In our survey, 40% of households owned guns, compared with an estimated 50% prevalence nationwide and 38% in Texas.<sup>10,11</sup> Easy access to firearms in the home in-



**Figure 1.**—The graph shows the distribution of firearm storage methods in 79 firearm-owning New Mexico households. Households were classified by the least safely stored firearm.

creases the likelihood of homicides, suicides, and unintentional injury deaths.<sup>2,3,5</sup> Given the high prevalence of gun ownership among New Mexico households, a significant number of people are at risk for firearm injury or death. The major strategy to deal with existing firearms is education. Educational efforts need to be broadly targeted. School-based education could target children who may have access to and play with guns in the home. Physicians can elicit information on guns in the home when seeing patients for well-child care or any other reason. Educational strategies could also provide information on gun storage and safety practices targeted at current and new gun owners. Other strategies to deal with the threat from firearms have been proposed, including legislation to limit gun ownership and design changes to prevent the unintentional firing of a gun.<sup>12</sup> Survey results such as these can help direct educational efforts toward groups with a higher prevalence of gun ownership and evaluate efforts to reach such groups.

Studies of unintentional firearm deaths in children indicate that most of these deaths occur in homes with improperly stored firearms.<sup>5</sup> In New Mexico, more than 90% of unintentional firearm deaths in children younger than 12 years occurred when a child found a loaded, unlocked firearm in the home.<sup>6</sup> In our survey, 38% of households with young children had a firearm in the home, and in 21% of these households, the firearm was stored unsafely. Review of the storage locations of loaded-unlocked guns identified sites that are easily accessible to children. Educational efforts should promote safer firearm storage practices. Furthermore, physicians should discuss firearm safety during routine well-child visits, a practice that is currently rarely carried out.<sup>11</sup>

The improper storage of firearms in the home also increases the risk of suicides<sup>13</sup>; however, its role in homicide risk is less clear. These deaths are often the result of impulsive behavior in response to a family argument or temporary crisis. The frequent spontaneity of events leading to these deaths suggests that ready access to a loaded firearm may be an important risk factor.

Previous studies indicate that handguns are more often stored unsafely than rifles and are more often involved

in intentional and unintentional firearm deaths.<sup>5,14</sup> In our survey, households with handguns only were three times more likely to report unsafe firearm storage than households with rifles only. This may be partly explained by the fact that most handguns are purchased for self-protection and therefore kept readily accessible.

One limitation of the study design is that only homes with telephones were represented in this survey. According to the 1990 census, 16% of homes in New Mexico do not have telephones, which is higher than the national rate. Such households may differ substantially from those with telephones with respect to firearm ownership and storage. A second limitation is the high refusal rate (27%) because households that refused to participate may also differ substantially from those that participated. The reasons for this high refusal rate are unclear because other surveys have found much lower refusal rates for questions regarding firearm ownership.<sup>15</sup> A third limitation is that we could not validate the responses concerning firearm ownership and storage. Others, however, have found excellent agreement between firearm-ownership surveys and firearm registration records.<sup>16</sup> A fourth limitation is the small sample size, which limited the description and analysis by racial or ethnic subgroups. Finally, we were not able to gather specific information regarding the owner of the firearms, preventing us from fully describing demographic differences between owners and nonowners.

Despite these limitations, this survey is a valuable first step in defining the prevalence of gun ownership and storage practices in New Mexico, and we hope it will stimulate efforts to address the hazards of gun ownership in the home and to assess the effects of interventions that promote safe gun storage.

## REFERENCES

1. New Mexico Selected Health Statistics, 1990. Santa Fe, New Mexico Department of Health, Office of Vital Records and Health Statistics, 1990
2. Brent DA, Perper JA, Allman CJ, Moritz GM, Wartella MA, Zelenack JP: The presence and accessibility of firearms in the homes of adolescent suicides. *JAMA* 1991; 266:2989-2995
3. Sloan JH, Kellermann AL, Reay DT, et al: Handgun regulations, crime, assaults, and homicide: A tale of two cities. *N Engl J Med* 1988; 319:1256-1262
4. Centers for Disease Control: Homicide surveillance 1979-1988. *MMWR CDC Surveill Summ* 1992; 41(No. SS-3):1-33
5. Wintermute KJ, Teret SP, Kraus JF, Wright MA, Bradfield G: When children shoot children: 88 unintended deaths in California. *JAMA* 1987; 257:3107-3109
6. Martin JM, Sklar DP, McFeeley P: Accidental firearm fatalities among New Mexico children. *Ann Emerg Med* 1991; 20:58-61
7. Marks JS, Hogelin GC, Gentry EM, et al: The Behavioral Risk Factor Surveys: I. State-specific prevalence estimates of behavioral risk factors. *Am J Prev Med* 1985; 1:1-8
8. Dean AG, Dean JA, Burton AH, Dicker RC: Epi Info, Version 5: A Word Processing, Database, and Statistics Program for Epidemiology on Microcomputers. Atlanta, Ga, Centers for Disease Control, 1990
9. Kleinbaum DG, Kupper LL, Morgenstern H: *Epidemiologic Research: Principles and Quantitative Methods*. Belmont, Calif, Wadsworth, 1982
10. Handgun Ownership in America. Princeton, NJ, Gallup Organization, 1991 [Distributed by the *Los Angeles Times* Syndicate, May 29, 1991]
11. Patterson PJ, Smith LR: Firearms in the home and child safety. *Am J Dis Child* 1987; 141:221-223
12. Christoffel KK: Toward reducing pediatric injuries from firearms: Charting a legislative and regulatory course. *Pediatrics* 1991; 88:294-305
13. Kellerman AL, Rivara FP, Somes G, et al: Suicide in the home in relation to gun ownership. *N Engl J Med* 1992; 327:467-472
14. Weil DS, Hemenway D: Loaded guns in the home: Analysis of a national random survey of gun owners. *JAMA* 1992; 267:3033-3037
15. Davis JA, Smith TW: *General Social Surveys 1972-1991: Cumulative Codebook*. Chicago, Ill, National Opinion Research Center, 1991 (National Data Program for the Social Sciences Series No. 12)
16. Kellermann AL, Rivara FP, Banton J, Reay D, Flegner CL: Validating survey responses to questions about gun ownership among owners of registered handguns. *Am J Epidemiol* 1990; 131:1080-1084